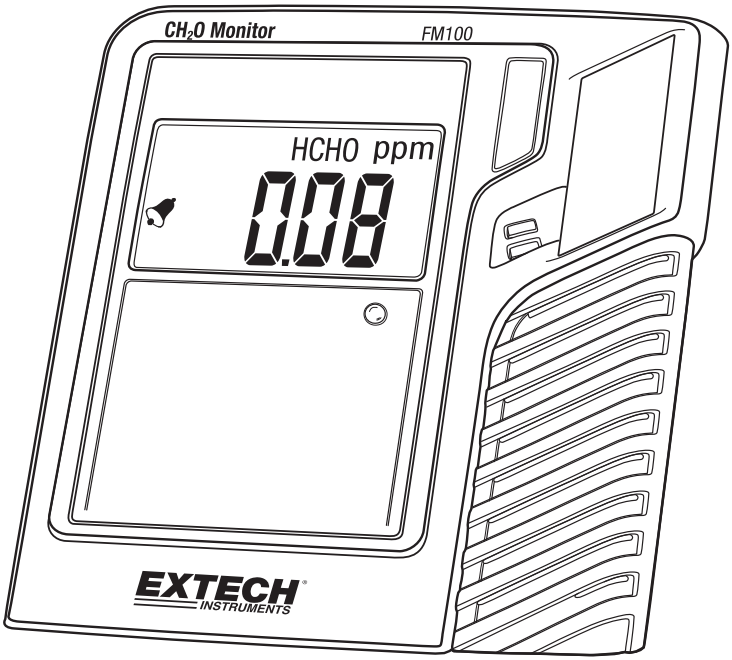
EXTECH INSTRUMENTS

USER GUIDE

# Digital Formaldehyde Meter

## Model FM100



# *Introduction*

Thank you for selecting the Extech Instruments Model FM100. The FM100 measures Formaldehyde $CH_2O$ (HCHO) concentration, Air Temperature, and Relative Humidity. The alarm feature alerts the user when the Formaldehyde 0.08ppm limit is exceeded.

The FM100 can be wall mounted or used as a table top device.

This device is shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please visit our website (www.extech.com) for the latest version of this User Guide, Product Updates, and Customer Care.

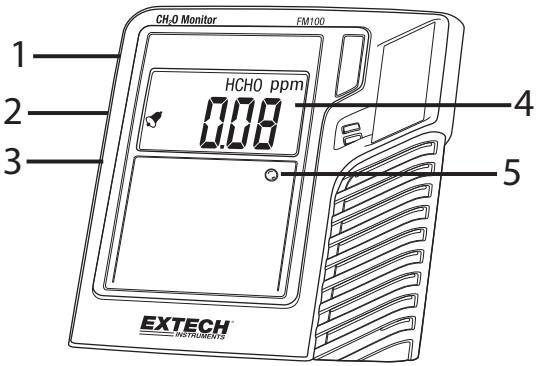
### Features

- Alternately displays Formaldehyde concentration, Air Temperature, and Relative Humidity at 6-second intervals
- Bright multicolor LED displays green for safe HCHO levels, yellow for caution, and red for danger
- Alarm display icon and audible beeper alerts user when Formaldehyde concentration limit of 0.08ppm is exceeded
- Selectable Formaldehyde unit of measure ppm or $mg/m^3$
- ZERO calibration function
- Manual temperature and Relative Humidity compensation
- Designed with electrochemical $CH_2O$ (HCHO) sensor
- Low battery indicator

# *Meter Description*

1. Offset adjustment potentiometer
2. Control Button
3. AC Power Adaptor Port
4. LCD Display
5. Multi-color LED Indicator

**Note:** Battery compartment, tilt stand, and wall mount located on rear of meter.



# *Operation*

## Powering the meter

If the meter is supplied without batteries installed, install the supplied batteries in the rear battery compartment to power the meter. Please observe proper polarity.

If the meter is supplied with the batteries installed, and a protective battery strip is installed in the battery compartment, remove the protective strip to power the meter.

Alternatively, plug an AC adaptor into the jack on the side of the meter and then into an AC power source to power the meter.

## Normal Operating Mode

When switched ON, the LCD displays '0000' for a period of time, depending on the time that the meter has been inactive. The meter will then proceed to the normal mode of operation where the LCD displays the current HCHO level in ppm, the Temperature (°C/°F), and RH% (relative humidity) alternately at 6 second intervals.

## Multi-Color Status Indicator LED

The Front panel status LED uses a color-coding system to inform the user as to the measured HCHO concentration. Green for Good; Yellow for Hazard; Red for Danger. If the LED fails to illuminate please return the unit for service.

## Alarm indication

When the Formaldehyde limit of 0.08ppm is exceeded the meter audibly beeps and flashes an alarm icon on the LCD. Refer to the CONTROL BUTTON section to learn how to silence the beeper.

## Control Button

The Control button located on the left side of the meter is used to control and program a variety of meter functions. Press and hold the Control button to enter the function mode. Repeated presses of the control button cycle through the available parameters. These parameters, in order, are:

- ZERO Calibration
- Temperature Unit selection (°C/°F)
- Temperature compensation (used in conjunction with side potentiometer adjust)
- Humidity compensation (used in conjunction with side potentiometer adjust)
- Unit of measure change (ppm or $mg/m^3$)
- Alarm Beeper ON/OFF
- Factory Default setting reset
- Escape/Return (abort operation and return to normal operation)

**Note:** A removable cover protects the offset adjustment and prevents unintentional adjustment. Remove the protective cover to perform an offset adjustment.

**ZERO Calibration**

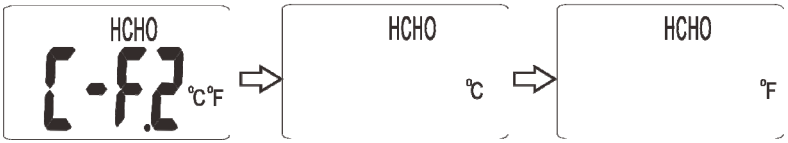
Ensure that calibration is performed in a clean air environment (no VOCs or HCHO gases).

Press and hold the control button for 3 seconds (until CAL 1 appears on the LCD screen). Press and hold the button again to start calibration.

Release the control button and wait 300 seconds for the calibration to complete. The meter will display 'END' for 2 seconds when calibration is complete and will then return to the normal mode of operation.

**Changing Temperature Units °C/°F**

When C-F2 is shown on the display, press and hold the control button to display the current temperature unit. Momentarily press the Calibration control button to toggle °C and °F units. To save setting, press and hold the control button. The meter will return to the normal mode.



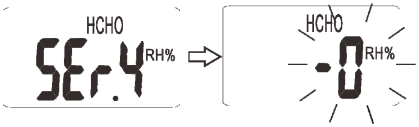

**Temperature Compensation Adjustment**

When SEt.3 is shown on the display, press and hold the control button. The factory default '0.0' value will flash. Turn the compensation potentiometer clockwise to increase the temperature offset or counterclockwise to decrease offset). The range is -5.4°F to +5.4°F (-3.0°C to +3.0°C). When done, press and hold the control button to save the setting. The meter will return to the normal measurement mode and will reflect the offset when temperature readings are displayed.

**Relative Humidity Compensation Adjustment**

When SEr.4 is shown on the display, press and hold the control button to enter the relative humidity compensation adjustment mode. Momentarily press the control button to make a step change in the RH% offset; the range is -9 to +9 RH %. When done, press and hold the control button to save the setting. The meter will return to the normal mode.

**Warning:** While performing the compensation adjustments, do not touch the sensor, as accuracy may be lost when adjusting the temperature values.




**Warning:** While performing temperature or RH% compensation adjustments do not touch the slotted openings on the meter housing, these are where the sensors are located. Otherwise, accuracy may be compromised.

**Change Formaldehyde Unit (ppm or mg/m$^3$)**

When P-95 is shown on the display, press and hold the control button to enter the unit selection mode. Choose the units (ppm or mg/m$^3$) by momentarily pressing the control button. Once the desired units are chosen, press and hold the control button to save the setting. The LCD display will return to the normal measurement mode.

**Beeper Activate or Inactivate Selection**

When bPr.6 is shown on the display, press and hold the control button to enter the alarm (beeper) setting mode. Momentarily press the control button to toggle the beeper condition ON or OFF. Once selected, press and hold the control button to save and return to the normal mode of operation.

### Revert to Factory Default Settings

When rFSn is shown on the LCD display, press and hold the control button to reset the meter to its default (factory) settings.

**Escape/Return Function**

When ESC8 is shown on the LCD display, press and hold the control button for 3 seconds to abort the current programming step and return to the normal measurement mode.

## *Maintenance*

### Low Battery Condition and Battery Replacement

When the battery icon (🔋) appears on the LCD, the batteries must be replaced. If the meter is low on battery voltage, erratic or inaccurate readings may result. Never use the meter with the low battery icon displayed.

The battery compartment is on the back of the instrument. Slide the battery compartment cover off of the meter to access the batteries. Replace the 4 AAA batteries observing proper polarity and replace the compartment cover before switching the meter ON.

**Battery Safety Reminders**

- Please dispose of batteries responsibly; observe local, state, and national regulations.
- Never dispose of batteries in a fire; batteries may explode or leak.
- Never mix battery types; install new batteries of the same type.

Never dispose of used batteries or rechargeable batteries in household waste.

As consumers, users are legally required to take used batteries to appropriate collection sites, the retail store where the batteries were purchased, or wherever batteries are sold.

**Disposal:** Do not dispose of this instrument in household waste. The user is obligated to take end-of-life devices to a designated collection point for the disposal of electrical and electronic equipment.

### Display Error Codes

The following errors may appear on the display:

**E-1:** HCHO readings are outside of the specified measurement range

**E-2:** Temperature readings are outside of the specified measurement range

**E-3:** Relative Humidity (RH %) readings are outside of the specified measurement range

## *Specifications*

| | |
|---|---|
| Display | Multifunction LCD; Dimensions 48 x 28mm (1.89 x 1.10”) |
| Front Panel LED indicator | Green for normal, yellow for caution, and red for danger |
| Formaldehyde $CH_2O$ (HCHO) measurement range | 0.00 to 5.00ppm ($mg/m^3$) |
| HCHO accuracy | ±5% of reading +0.03ppm (baseline drift)<br>Accuracy Note: Accuracy meets NIOSH acceptance criterion within ±25% of the true value at 95% confidence level |
| Air Temp. Measurement range | 0°C to 50°C (32°F to 122°F) |
| Air Temperature Resolution | 0.1°C (0.1°F) |
| Air Temperature Accuracy | ±1.0°C (1.8°F) |
| Relative Humidity range | 20 to 90%RH |
| RH Resolution | 1% RH |
| Relative Humidity Accuracy | ±5% |
| Power | AAA batteries x 4 pcs or universal AC adaptor (included) |
| Meter dimensions | 113 x 108 x 53mm (4.4 x 4.3 x 2.1”) |
| Weight | 159g (5.6 oz.) |

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